Space Weather Forecast

Issued on Wednesday, 08 November 2023 at 13:08 Local

This forecast provides a four day assessment of space weather events. The probabilities stated below are for reaching or exceeding the given levels. For more information about space weather impacts please see the Met Office Space Weather Scales https://www.metoffice.gov.uk/weather/learn-about/space-weather/uk-scales

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Space Weather Forecast Headline: Slight Chance of G1/Minor Geomagnetic Storms at first, but risk declining. Chance of isolated Moderate flares.

Analysis of Space Weather Activity over past 24 hours

Solar Activity: Activity has been Low with only Common-class flares observed in the last 24 hours, the largest of which came from a sunspot region near centre-disk. There are five numbered and one unnumbered sunspot region on the visible disc. The largest region, located in the south, remains fairly stable. A region in the northwest has seen development and growth in recent hours and will be monitored closely. Another region, located near centre-disk, has also seen multiple spots emerge in recent hours with a complex magnetic configuration developing, likely increasing the flare risk from this region in the coming hours/days. The remaining regions remained stable.

A coronal mass ejection (CME) on the northwestern limb was observed around 08/0700 UTC, but is missing ahead of Earth. No other Earth-directed CMEs have been observed.

Solar Wind / Geomagnetic Activity: Solar winds showed the continued impact of fast solar winds. Wind speeds were strong, generally 650-720 km/s. Total interplanetary magnetic field (IMF) strength showed a slowly rising trend before then showing a slow declining trend, but has remained generally weak. The important north-south component varied weakly. Geomagnetic activity has been generally Quiet to Unsettled (Kp2-3).

Energetic Particles / Solar Radiation: The count rate of energetic particles (high energy protons) remained at background levels with no solar radiation storms observed.

Four-Day Space Weather Forecast Summary

Solar Activity: Generally Low solar activity is expected through the period, but with a chance of isolated Moderate-class flares.

Solar Wind / Geomagnetic Activity: No CMEs currently forecast to reach Earth. Elevated to strong wind speeds are likely to continue through Days 1 and 2 (8-9 Nov) due to the ongoing HSS from CH67/-, before a gradual decline through Days 3 and 4 (10-11 Nov).

Geomagnetic activity expected to be generally Unsettled (Kp3) initially, with a slight chance of further isolated G1/Minor Storm intervals (Kp5) on Days 1 and 2. This risk reducing into the period with activity expected to gradually decline through the following days as the HSS eases to generally Quiet (Kp1-2) levels.

UK Aurora Forecast: Aurora is likely to remain visible for parts of northern Scotland on Day 1 (8 Nov), and possibly continuing into Day 2 (9 Nov), before likely declining for subsequent days.

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Met Office Space Weather Forecast

Energetic Particles / Solar Radiation: The count rate of energetic particles (high energy protons) is most likely to remain at background levels with no solar radiation storms occurring.

Geomagnetic Storms:

Geo-Magnetic Storm Probability (Exceedance)	Level	Past 24 Hours (Yes/No)	Day 1 (00-24 UTC) (%)	Day 2 (00-24 UTC) (%)	Day 3 (00-24 UTC) (%)	Day 4 (00-24 UTC) (%)
Minor or Moderate	G1 to G2	No	20	15	5	1
Strong	G3	No	1	1	1	1
Severe	G4	No	1	1	1	1
Extreme	G5	No	1	1	1	1

Radio Blackouts - X Ray Flares:

X Ray Flares Probability	Level	Past 24 Hours (Yes/No)	Day 1 (00-24 UTC) (%)	Day 2 (00-24 UTC) (%)	Day 3 (00-24 UTC) (%)	Day 4 (00-24 UTC) (%)
Active	R1-R2 M Class	No	30	30	30	30
Very Active	R3 to R5 X	No	5	5	5	5

Solar Radiation Storms - (High Energy Protons):

Radiation Storms Probability (Exceedance)	Level (cm^{-2} sr^{-1} s^{-1})	Past 24 Hours (Yes/No)	Day 1 (00-24 UTC) (%)	Day 2 (00-24 UTC) (%)	Day 3 (00-24 UTC) (%)	Day 4 (00-24 UTC) (%)
Active	≥ S1	No	5	5	5	5
Very Active	≥ S3 *	No	1	1	1	1

* S3 ≥ 10 MeV ≥ 1000 pfu and / or ≥ 50 MeV ≥ 10 pfu. (pfu = $cm^{-2}sr^{-1}s^{-1}$)

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